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Mapping and Assessment of Ecosystems and their Services

EEA Grants/European Conference

Trondheim, Norway, 27 – 28 May 2015

Co-chairs' Report

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Introduction and background

The European Economic Area Grants (EEA Grants) /European Conference on Mapping and Assessment of Ecosystems and their Services was held at the Britannia Hotel in Trondheim, Norway, 27-28 May 2015. The conference was organized by the Norwegian Environment Agency and was funded by the EEA and Norway Grants.

The conference brought together more than 80 policy-makers, government officials, scientists and civil society representatives to discuss challenges facing European countries regarding mapping and assessment of ecosystems and their services. Participants represented a number of European countries, including from Norway and from the seven EU countries that have chosen to implement relevant biodiversity and ecosystem services programs under the EEA and Norway Grants, Bulgaria, the Czech Republic, Estonia, Lithuania, Poland, Romania and Slovenia. The conference also had participants from relevant key European institutions, including the European Commission, the European Environment Agency and the Financial Mechanism Office of the EEA and Norway Grants.

Rationale and objectives

There has in recent years been a growing interest in developing more cooperation and new activities related to *mapping and assessment of ecosystems and their services*, both in general and under the EEA and Norway Grants in particular. This conference was a response to this interest, providing an arena to share experiences and to learn from each other and to discuss policy guidelines, methodology and practical approaches. In addition, the conference provided a platform for increased European cooperation, in particular within the framework of the EEA and Norway Grants¹.

Participants heard about recent reports from the European Environment Agency on status and trends in *pressures and impacts on European ecosystems*². The reports showed some discouraging developments, in particular for freshwater and marine ecosystems. There is also limited or little progress related to some global and EU environmental policy targets, with habitat change, climate change, overexploitation, invasive species, and pollution and nutrient enrichment continuing to exert pressures on European ecosystems.

To reach policy makers, economic sectors and public at large, it is important that society and decision makers recognize, demonstrate and capture the broad range of values of ecosystems and their services. We need to map and assess ecosystems and their services to improve knowledge and evidence base for policy. Enhanced efforts in mapping and assessment of ecosystems and their services can contribute to improved management of European ecosystems, by *raising awareness* of the importance of the natural environment to human well-being and economic prosperity and by facilitating *stakeholder participation* and better *inter-disciplinary cooperation*. Such a linkage is reflected for example in Estonia, where an overall objective is to contribute to the reduction of biodiversity and ecosystem degradation of marine and inland waters by developing methodologies for assessment and mapping of ecosystem services.

Key questions raised in the debate/discourse included whether Europe's ecosystems are in good shape to continue delivering essential ecosystem services and whether we can demonstrate and value better the flow of ecosystem services from ecosystems to society.

Backbones and obligations

Important backbones for the conference were the Aichi targets for 2020 under the Convention on biological diversity (CBD)³, the EU Biodiversity Strategy to 2020⁴, and the UN project on The Economics of Ecosystems and Biodiversity (TEEB)⁵. The conference was aligned to EU efforts on Mapping and Assessment of Ecosystems and their Services (MAES)⁶ as well as to work under the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)⁷.

The conference in particular related to Action 5 of the EU Biodiversity Strategy on improving the knowledge of ecosystems and their services in the EU. This includes obligations to map and assess the state of ecosystems and their services, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national levels by 2020.

Building on obligations and guidance from the global and European levels, practical implementation on mapping and assessment takes place at the national and regional levels. Present frameworks allow for a range of approaches, where countries can work on scales and policy areas that are relevant to their needs and that are adapted to their opportunities and constraints. To secure implementation there may often be a need to embed efforts in national policy and legislation, as indicated for example by Poland.

Several presentations and interventions stressed the need to *mainstream* challenges related to biodiversity and ecosystem services, and to see how ecosystem services mapping and assessment can serve as a tool for supporting policy and land management. Key policy areas include environmental policy, agricultural policy, regional and urban policy, water policy, sustainable urban development and sustainable forest management. Such linkages are for example explicit in the overall goal and expected outcome for preparing a national study on the distribution and state of the main ecosystem services in Lithuania, which is to improve integration of biodiversity considerations in sectorial policies and legislation by improved knowledge on these main ecosystem services.

Participants heard that *natural capital* is increasingly used as a key term both in the EU and at the national level. The term is used to describe the parts of the natural environment that produce value to people, where natural capital underpins all other types of capital – human, manufactured and social – and is the foundation on which our economy, society and prosperity is built. A key issue in this regard is that stewardship of natural capital must be perceived as a foundation for growth and development.

Frameworks and building blocks

Experiences underline the need for *stepwise approaches* in a number of respects. This includes the stepwise implementation reflected in the work of MAES, going from bio-physical ecosystem capital accounts to accounting for ecosystems and their services and on to valuation of ecosystems and their services. Such a stepwise approach is for example inherent in the project on ecosystem mapping and integrated assessment of ecosystem services in the Czech Republic, where the three aims are identification and mapping of available ecosystem services, valuation of ecosystem services in biophysical and economic units and synthesis of values associated with particular ecosystem services and ecosystems. Stepwise approaches also allow for developing and improving methodology and understandings, going from broad to more detailed scales and resolutions, going from general communication to more specific management challenges and involving increasing numbers of stakeholders.

The conference showed a general agreement on using and developing the building blocks that have been developed at the European level, in particular through MAES efforts and by the Joint Research Centre (JRC) and the European Environment Agency. These building blocks include a *common assessment framework*, a conceptual framework linking biodiversity to human well-being and linking ecosystem condition to ecosystem services, and typologies for ecosystems and ecosystem services. Several references were made to the importance of maintaining good links between biophysical assessments and biophysical and monetary accounts.

The conference heard from the European Commission that *natural capital accounting* (NCA) will gain prominence in next steps of MAES, following initial focus on biophysical mapping and assessment. This increased focus is also in line with the seventh Environment Action Program in the EU⁸, which says that the integration of the economic value of ecosystem services into accounting and reporting systems at EU and national level by 2020 will result in better management of the EU's natural capital.

Participants also got an update on developments at the global level on reflecting ecosystems and their services in *national accounting and statistics*. There are significant efforts on developing a System of environmental-economic accounting (SEEA), including work on experimental ecosystem accounting. This is intended to be a platform for integration of relevant information on ecosystem extent, condition, capacity and services with information on economic and other human activity. Important developments have been made, but challenges remain in a number of areas, including accounts for ecosystem capacity and for ecosystem assets. From Statistics Norway it was underlined that ecosystem capacity is an important factor, - a destroyed or depleted ecosystem may still have the capacity to produce ecosystem services in the future. This was illustrated by an example from the "Black Triangle", a border region shared by Germany, Poland and the Czech Republic, where areas have been restored following high levels of pollution. It was mentioned that a Knowledge innovation project (KIP) is being developed in the EU, seeking to meet needs for spatially explicit data layers in ecosystem accounting.

Lessons learned and plans at the national level

Participants heard that efforts related to mapping and assessment of ecosystems and their services have started in almost all EU member states and in several other European countries. Some countries have completed national scale mapping, while many countries have regional case studies. A more complete picture of the status of MAES in the different EU member states will be available by the end of 2015 as part of the mid-term review of the EU 2020 Biodiversity Strategy.

It is evident that frameworks, terminology and approaches related to *ecosystem services* and to natural capital are rapidly being integrated and mainstreamed into research, management and policy, both at EU/European and national levels.

There appears to be agreement that obligations under the CBD and Action 5 under the EU Biodiversity Strategy and efforts by the TEEB project, and the MAES working group have been instrumental in generating, boosting, scaling up and harmonizing mapping and assessment activities at national and regional scales. It is also positive that a solid community of practice is being established.

Participants heard about national efforts and plans in some countries, in particular Bulgaria, the Czech Republic, Estonia, Lithuania, Norway, Poland, Romania and the United Kingdom. Presentations showed many different types of experiences, where mapping, assessment and valuation is undertaken at different scales and for different purposes. Several large national efforts were mentioned, as well as more regional and thematic studies. Examples of thematic studies include studies on urban

ecosystem services in Norway and Poland, studies on forests in Bulgaria and studies on inland waters/wetlands in Estonia and Poland. The presentations also reflected different tools and methods being used, including databases and mapping tools.

Data availability is a key challenge in many countries, underlining the need for appropriate efforts on mapping and monitoring of ecosystems. At the same time, many countries do their best to compile and integrate the best available data they have, in order to get the best possible mapping and assessment of for example land use, land cover, ecosystem service capacity and ecosystem service delivery. The use of model sites and pilot areas may also be a useful approach. This was illustrated for example by the establishment of a network of model sites in Lithuania, where many ecosystem services will only be studied in detail in selected model sites in order to save costs and time.

Participants heard that there could be significant differences in the levels of knowledge related to different ecosystem services. Czech and Lithuanian efforts for example indicate that provisioning services and some cultural services benefit from the best understandings of linkages between ecosystems and human well-being and from most available data and information.

Several presentations underlined the need for more detailed maps when decisions are to be made at a local scale and/or related to a specific sector or task (for example agriculture and water retention) and/or to particular ecosystems. Bulgaria mentioned that smaller scale ecosystems require fieldwork verification, and iterative verification approaches by different sources should therefore be facilitated.

Many presentations and interventions stressed the need for *involving stakeholders*, all the way from study design and knowledge generation to decision support and policy implementation. This was for example underlined by Norway, who referred to cooperation in areas such as national programs related to mapping and monitoring of marine ecosystems. The need to adapt to different decision makers was also underlined in several presentations, for example on the project for demonstrating and promoting natural values to support decision making in Romania.

There is an increasing focus on *ecosystem capacity* and assessment of actual and potential ecosystem services supply. Several efforts were mentioned, including for example maps and accounts on ecosystem capacity and illustrations in trends for selected services⁹. One specific example is the Estonian matrix used to illustrate the capacity of rivers with different hydromorphological, ecological and chemical status to offer ecosystem services today.

Participants heard about a number of ideas and plans for *next steps* in many countries, reflecting ambitions for more detailed studies and for studies targeted at more specific users and decision contexts. One example is the use of mapping and assessment results in the Czech Republic as input to a national assessment of global change impacts on environmental security. Another example is using economic valuation of main ecosystem services in order to identify priorities for the restoration of ecosystems in Lithuania. A third example is mapping and assessing of degraded ecosystems as a precondition for the Large Infrastructure Operational Program in Romania.

Several interventions underlined the need for *timely and relevant information*, both for the range of contributors to mapping and assessment efforts and for different user groups and stakeholders. The Norwegian Nature Index was presented as an example of a framework for communicating expert knowledge on biodiversity to society, presenting an overview/synthesis of state and trends of biodiversity in Norway based on this knowledge.

Several presentations concluded that more *valuation* (demonstration of values) can help us in understanding trade-off and change so that we can make better management decisions. In light of this,

meaningful economic valuation needs to ask what would we be willing to give up in order to have more of something else. Participants heard that values of ecosystem services are *decision-context specific*, and that the policy context and management purpose is paramount. Many presentations stressed that valuation is not about setting a fixed, monetary value on ecosystems as such, as natural assets are of infinite value because they sustain life.

If successful, mapping and assessment can create compelling and more easily understood explanations of the state and values of natural environments and ecosystem services. Good assessments can also provide valuable syntheses of what is currently known on ecosystems and their services and exploring the interlinkages between habitats, ecosystem services and biodiversity.

Participants for example heard that the United Kingdom National Ecosystem Assessment (UK NEA) has been seen as directly influential to policy. Related commitments do not just cover nature conservation, but also links to the economy and to other sections of society, all of whom can benefit from a healthy natural environment. This encouraged the participation of a wide range of academics, and interest from others such as NGOs and government agencies. It appears that successful ecosystem assessments share three basic criteria, and these are credibility, legitimacy and relevance (saliency). To achieve this, it is essential to consider both the process and product and to secure user engagement, communication and capacity building.

Development needs and continued cooperation

Presentations and interventions showed that countries are facing many of the same tasks and challenges, and that there is general agreement on needs for improved methods and approaches. This means that there may be many benefits in learning from each other and many opportunities for finding the way together.

Participants heard about a number of ongoing European efforts in the *research community*, including projects such as ESMERALDA¹⁰ (supported by Horizon 2020), OpenNESS¹¹, OPERAs¹², and MARS¹³, and networks such as the Ecosystem Services Partnership (ESP)¹⁴ and ALTER-Net¹⁵. The European Commission also informed the Conference on the World Bank-led partnership WAVES¹⁶ (Wealth accounting and valuation of ecosystem services), and the European Environment Agency informed about BISE (the Biodiversity Information system for Europe). It was acknowledged that efforts must continue on building bridges from the scientific community to policy and management, i.e. improving and developing the *science-policy interface*.

There is agreement that we need to continue development of tools and methods. There appears to be a need for a *range of tools* adapted to different users and stakeholders, including planners, developers, businesses and nature conservation interests. Tools and methods for trade-offs appear to be a particular challenge. Several references were made to the need for adapting more to *user needs* and to *decision contexts* and for understanding better the "demand side" of ecosystem services, i.e. *social needs* that can be met by ecosystem capacities. The need for involving more social sciences was mentioned, including for example in the mapping and assessment of cultural services. There is also a need for understanding better the linkages between different components of biodiversity and the capacity to provide ecosystem services.

The MAES working group and the European Environment Agency provide important arenas for developing approaches and for sharing data and experiences at the European level. There is also in place co-operation between the European Environment Agency and Eurostat. Participants also encouraged

national *statistical agencies* to be more involved than today, in particular in light of increased focus on natural capital accounting.

There is also a need for good and appropriate arenas for *learning and training*, both at national and European levels. One relevant ongoing EU initiative is TRAIN, aimed at training EU member states on ecosystem services mapping through hands-on workshops. An example at the national level is the national symposiums and related publications in Poland for looking at environment and economics and at ecosystem services in a transdisciplinary approach.

More information and data on mapping and assessment of ecosystems and their services may be made available by non-EU countries, and increased involvement was encouraged by participants.

Participants acknowledged that several funding schemes related to mapping and assessment of ecosystems and their services are available in the EU as well as under the EEA and Norway Grants. The Norwegian government indicated in the opening session that climate, energy and environment will be one of five priority areas in the next project period for the EEA and Norway Grants, formally running from 2014-19. Participants welcomed opportunities for such funding opportunities, and they encouraged enhanced information and appropriate synergies with EU and other funding schemes.

Closing remarks

We believe the conference gave the participants an arena to look at lessons learnt and to share a range of experiences at European and national levels. We also hope it worked as an arena to consider aspirations, opportunities and also limitations related to mapping and assessment of ecosystems and their services. Our understanding is that the participants had a good and fruitful conference, and that they will bring back knowledge, inspiration, new ideas, helpful contacts and friendships.

We also hope this report may provide advice and inspiration for further efforts related to mapping and assessment of European ecosystems and their services, both in general and within the framework of the EEA and Norway Grants in particular.

This report seeks to reflect the general findings and sentiments from the conference, but we as co-chairs are ultimately responsible for the conclusions and recommendations presented in this report.

About the conference and this report

This report has been produced by the two conference co-chairs, who were *André Kammerud*, head of the International section in the Norwegian Environment Agency, and *Tone Solhaug*, senior adviser in the Norwegian Ministry of Climate and Environment.

Presentations from the conference are available through the home pages for the Norwegian Environment Agency at <http://www.miljodirektoratet.no/no/Nyheter/Arrangementer/Mapping-and-Assessment-of-Ecosystems-and-their-Services-27--28-May-2015/>. This home page also includes the list of participants, the conference program and other documentation related to the conference.

Members of the conference organizing committee were Svein T. Båtvik (coordinator), Elisabeth Jernqvist, Finn Katerås, Else Løbersli and Kristin Sundal, all from the Norwegian Environment Agency. The conference organizing committee also functioned as the rapporteur team for this report.

Funding was provided by the EEA and Norway Grants through the Financial Mechanism Office (FMO)¹⁷.

¹ The EEA Grants and Norway Grants represent the contribution of Iceland, Liechtenstein and Norway to reducing economic and social disparities and to strengthening bilateral relations with 16 EU countries in Central and Southern Europe. Information about the EEA and Norway Grants is available at <http://eeagrants.org/>.

² In particular the *State of the European Environment Report* from March 2015 and the *State of nature in the EU* report from May 2015, both available at <http://www.eea.europa.eu/publications>.

³ Information about the Aichi targets is available at <https://www.cbd.int/sp/targets/>.

⁴ Information is available at <http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm>.

⁵ Information on TEEB is available at www.teebweb.org.

⁶ Information on MAES is available at <http://biodiversity.europa.eu/maes>.

⁷ Information on IPBES is available at www.ipbes.net.

⁸ Information is available at <http://ec.europa.eu/environment/newprg/>.

⁹ Including a JRC report with an analysis of trends in the spatial extent of ecosystems and supply and use of ecosystem services at the European scale between 2000 and 2010, available at <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/mapping-and-assessment-ecosystems-and-their-services-trends-ecosystems-and-ecosystem>.

¹⁰ Information on ESERALDA is available at <http://www.esmeralda-project.eu/>.

¹¹ Information on OpenNESS is available at <http://www.openness-project.eu/>.

¹² Information on OPERAS is available at <http://www.operas-project.eu/>.

¹³ Information on MARS is available at <http://www.mars-project.eu/>.

¹⁴ Information on ESP is available at <http://www.es-partnership.org/esp>.

¹⁵ Information on ALTER-Net is available at <http://www.alter-net.info/>.

¹⁶ Information on WAVES is available at <http://www.wavespartnership.org/en/waves>.

¹⁷ A news story from the FMO on the conference is available at <http://eeagrants.org/News/2015/Safeguarding-European-ecosystems-and-the-services-they-provide>. There is also a news story (Norwegian only) from the Norwegian Ministry of Foreign Affairs on the conference and on EEA Grants efforts on ecosystems, which is available at <https://www.regjeringen.no/nb/aktuelt/biologisk-mangold-i-europa/id2414963/>.